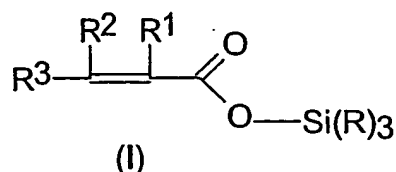


Claims

1. Process for the preparation of trihydrocarbylsilylated unsaturated carboxylate monomers of either general formula (I)



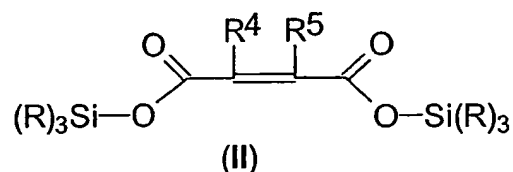
wherein

each R independently represents an alkyl, a substituted alkyl, an aryl or a substituted aryl group,

R^1 , R^2 each independently represents a hydrogen atom or an alkyl or substituted alkyl group, an aryl or substituted aryl group

R^3 represents a hydrogen atom, an alkyl or substituted alkyl group, an aryl or substituted aryl group, or $-\text{COOR}^6$ wherein R^6 represents an alkyl, a substituted alkyl, an aryl group or a substituted aryl group,

or general formula (II)

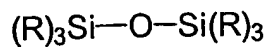


wherein

each R is as already defined above

R^4 , R^5 each independently represents a hydrogen atom or an alkyl or substituted alkyl group, an aryl or substituted aryl group

which process comprises the step of reacting, in the presence of a catalyst, a hexahydrocarbyldisiloxane of formula (III)

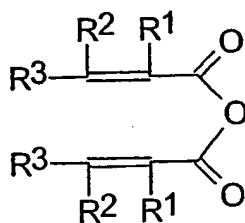


(III)

wherein

R is as already defined above

either with an unsaturated carboxylic anhydride of formula (IV),

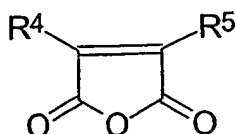


(IV)

wherein

R^1 , R^2 , R^3 are as already defined above

or with an unsaturated carboxylic anhydride of formula (V)



(V)

wherein R^4 , R^5 are as already defined above.

- 5 2. A process according to claim 1, wherein R and R^6 each independently represent a linear, branched, or cyclic or polycyclic alkyl, substituted alkyl, aryl or substituted aryl group, saturated or unsaturated, containing from 1 to 12 carbon atoms.
- 10 3. A process according to claim 1, wherein R and R^6 each independently represent a linear, branched, or cyclic or polycyclic alkyl, substituted alkyl, aryl or substituted aryl group, saturated or unsaturated, containing from 1 to 6 carbon atoms.
- 15 4. A process according to claim 1, wherein R and R^6 each independently represent a linear, branched, or cyclic or polycyclic alkyl, substituted alkyl, aryl or substituted aryl group, saturated or unsaturated, containing from 1 to 4 carbon atoms.
- 20 5. A process according to claim 1, wherein R is chosen from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, i-butyl, sec-butyl, t-butyl, 2-methylbutyl, 2,3-dimethylbutyl, lauryl, pentyl, n-amyl, iso-amyl, n-hexyl, cyclohexyl, 3-methylpentyl, n-octyl, t-octyl, n-dodecyl, phenyl or substituted phenyl, and the like.
- 25 6. A process according to claim 2 wherein R each independently are chosen from the group of methyl, ethyl, n-propyl, isopropyl, n-butyl, i-butyl, t-butyl, phenyl or substituted phenyl.
- 30 7. A process according to claim 6 wherein R are n-butyl or isopropyl.

8. A process according to claim 6 wherein phenyl is substituted by linear or branched alkyl, aryl, halogene, alkoxy, phenoxy or nitro.
- 5 9. A process according to any of the preceeding claims, wherein the unsaturated carboxylic anhydrides of formula (IV) are selected from the group consisting of acrylic anhydride, methacrylic anhydride, crotonic anhydride, angelic anhydride, and tiglic anhydride.
- 10 10. A process according to any of the preceeding claims, wherein the unsaturated carboxylic anhydrides of formula (V) are selected from the group consisting of maleic anhydride, and citraconic anhydride.
- 15 11. A process according to any of the preceeding claims, wherein the catalyst comprises a mixture of a strong acid and a nucleophilic base.
12. A process according to claim 11, wherein the catalyst consists of a mixture of a strong acid and a nucleophilic base.
- 20 13. A process according to any preceding claim, wherein the strong acid has a pka value less than 5.
- 25 14. A process according to any preceding claim, wherein the nucleophilic base is a base having an available electron pair for donation.
- 30 15. A process according to any preceding claims, wherein the acids are independently selected from sulfuric acid, phosphoric acid, chlorhydric acid, bromhydric acid, hydriodic acid, nitric acid, trifluoromethanesulfonic acid or perfluoroalkylsulfonic acids, methanesulfonic acid, para-toluene sulfonic acid or trifluoroacetic acid.
16. A process according to any preceding claim, wherein the nucleophilic bases are independently selected from pyridine, 2-

(dimethylamino)pyridine, 4-(dimethylamino)pyridine, 4-piperidino pyridine, 4-(4-methylpiperidino)pyridine, 4-pyrrolidinopyridine, 4-morpholinpyridine, imidazole, 1-methylimidazole, 2-methylimidazole, 4-methylimidazole, polymer- bound dimethylaminopyridine (examples of which may be found in US4997944 incorporated herein by reference), 1-methylbenzimidazole, 2-methylbenzimidazole, benzimidazole and, in addition, N-methyl imidazole(NMI), N,N-dimethylamino pyridine(DMAP), hexamethylphosphoric triamide(HMPA), 4,4 dimethyl imidazole, N-methyl-2-pyridone(NMP), pyridine N-oxide, triphenylphosphine oxide, 2,4 dimethyl pyridine, N-methyl-4-pyridone, ZnCl_2 , 3,5 dimethyl pyridine, imidazole, trimethylamine, triethylamine, p-dimethylaminobenzaldehyde, 1,2-dimethyl imidazole and montmorillonites such as K10 or KSF.

17. A process according to claim 11, 12, 14 or 16 wherein the strong acid is a strong ion exchange resin.
18. A process according to any preceding claim, wherein the molar ratio of strong acid to nucleophilic base in the catalyst is in the range 1:10 to 10:1.
19. A trihydrocarbylsilylated unsaturated carboxylate monomer as defined in formula I produced by a process in accordance with any one of claims 1-18.